

IN THE CLAIMS:

Please amend the claims as follows:

Cancel claims 1-10.

11. (New) A switching power supply circuit, comprising:
- a rectification section for receiving a commercial AC voltage as an input thereto and performing rectification operation for the commercial AC voltage to produce a rectified voltage;
 - a smoothing section for outputting a DC voltage produced by smoothing the rectified voltage from said rectification section;
 - a switching section including one or a plurality of sets of two switching elements connected in series to each other between the DC voltage and a reference potential for interrupting the DC voltage from said smoothing section;
 - an insulating converter transformer including a core having a gap formed therein and a primary winding and a secondary winding wound on said core for transmitting an output of said switching section obtained at said primary winding to said secondary winding;
 - a primary side series resonance circuit formed at least from a capacitance of a primary side series resonance capacitor connected in series to said primary winding of said insulating converter transformer for resonating with a resonance frequency determined in advance to make operation of said switching section as that of the current resonance type;
 - a driving section for driving each of said switching elements which form said switching section to switch in a switching frequency determined in advance;
 - a primary side partial voltage resonance circuit provided for each of said plurality of sets of switching elements which form said switching section and formed from a capacitance of a primary side partial voltage resonance capacitor connected in parallel to a predetermined one of

said switching elements and a leakage inductance component of said primary winding of said insulating converter transformer for performing partial voltage resonance operation only within a turnoff period of the switching element which forms said switching section;

a DC output voltage production section for receiving an alternating voltage obtained at said secondary winding of said insulating converter transformer as an input thereto and performing rectification operation for the inputted alternating voltage to produce a secondary side DC output voltage; and

a constant voltage control section for controlling said driving section in response to a level of the secondary side DC output voltage from said DC output voltage production section to vary the switching frequency to perform constant voltage control for the secondary side DC output voltage;

a width of said gap of said core and an induced voltage per one turn of said secondary winding being set so that secondary side current to flow through said secondary winding may flow continuously.

12. (New) A switching power supply circuit, comprising:

a rectification section for receiving a commercial AC voltage as an input thereto and performing rectification operation for the commercial AC voltage to produce a rectified voltage;

a smoothing section for outputting a DC voltage produced by smoothing the rectified voltage from said rectification section;

a switching section including one or a plurality of sets of two switching elements connected in series to each other between the DC voltage and a reference potential for connecting the DC voltage from said smoothing section;

a driving section for driving said switching section to switch in a switching frequency determined in advance;

an insulating converter transformer including a core having a gap formed therein and a primary winding and a secondary winding wound on said core for transmitting an output of said switching section obtained at said primary winding to said secondary winding;

a primary side series resonance circuit formed at least from a primary side series resonance capacitor connected in series to said primary winding of said insulating converter transformer for resonating with a resonance frequency determined in advance to make operation of said switching section as that of the current resonance type;

a primary side partial voltage resonance circuit provided for each of said plurality of sets of switching elements which form said switching section and formed from a capacitance of a primary side partial voltage resonance capacitor connected in parallel to a predetermined one of said switching elements and a leakage inductance component of said primary winding of said insulating converter transformer for performing partial voltage resonance operation only within a turnoff period of the switching element which forms said switching section;

a DC output voltage production section for receiving an alternating voltage obtained at said secondary winding of said insulating converter transformer as an input thereto and performing rectification operation for the inputted alternating voltage to produce a secondary side DC output voltage;

a secondary side partial voltage resonance circuit formed from a capacitance of a secondary side partial voltage resonance capacitor connected in parallel to said secondary winding of said insulating converter transformer and a leakage inductance component of said secondary winding for performing partial resonance operation on the secondary side; and

a constant voltage control section for controlling said driving section in response to a level of the secondary side DC output voltage from said DC output voltage production section to vary the switching frequency, which is used for the switching driving of said plurality of switching elements, to perform constant voltage control for the secondary side DC output voltage;

a width of said gap of said core and an induced voltage per one turn of said secondary winding being set so that secondary side current to flow through said secondary winding may flow continuously.

13. (New) A switching power supply circuit according to claim 11, wherein said driving section is a driving resonance circuit which includes a driving winding and a driving resonance capacitor connected in series to said driving winding and has a switching frequency based on a resonance frequency determined by an inductance of said driving winding and a capacitance of said driving resonance capacitor.

14. (New) A switching power supply circuit according to claim 13, wherein said driving winding of said driving section is a driving winding of an orthogonal control transformer, and said orthogonal control transformer includes said driving winding, a detection winding connected in series to said primary winding and said primary side series resonance capacitor, and a control winding wound in an orthogonal direction to said driving winding and said detection winding for being supplied with control current of a level corresponding to a variation of a level of the secondary side DC output voltage, the inductance of said driving winding being variably controlled by varying the control current.

15. (New) A switching power supply circuit according to claim 11, wherein a center tap connected to a reference potential is provided at a central portion of said secondary winding of

said converter transformer, and a rectifier and a smoothing capacitor are provided at each of the opposite end portions of said secondary winding so that full-wave rectification is performed.